

There are no amendments to the specification.

REMARKS

The following claims are pending in the application: 1 - 46

The following claims have been amended: 1, 9, 34

The following claims have been deleted or
withdrawn: 32 and 33

The following claims have been added: N/A

As a result of the foregoing Amendment, the following claims remain pending in the application: 1 – 31 and 34 - 46.

The Examiner's Indication of Allowability

Applicants appreciate the Examiner's indication of the allowability of claims 13, 24 -27, 42- 43 and 45.

The Rejection under 35 U.S.C. 102 based upon the Lyons reference (US Patent No. 5,929,595)

The Examiner has rejected claims 1, 2, 10, 11, 17 and 34 as allegedly anticipated by the Lyons reference (US Patent No. 5,929,595).

The Examiner has taken the position that the Lyons reference discloses all of the material features of the claimed invention.

Applicants have amended claims 1 and 34 to more particularly point out that the present invention includes a bank of ultracapacitors as its energy storage system. Claim 34 has also been amended to clarify that the controller is programmed to control

the electric motor rather than the engine; as the control of the electric motor is used to maintain capacitor level.

The claims as amended now specify that the energy storage system comprises a bank of ultracapacitors, and a programmed controller to maintain the energy storage system comprising that bank of ultracapacitors between a predetermined high voltage set-point and a predetermined low voltage set-point.

Applicants respectfully submit that the Lyons reference relates only to a means of maintaining proper state of charge (SOC) of a battery in a series hybrid vehicle. Lyons teaches the determination of the SOC by Coulomb counting (i.e., keeping track of ampere-hours in and out of the battery). Accordingly, the Lyons reference does not teach or suggest replacing a battery with a bank of ultracapacitors and, thus does not teach or suggest providing a power management controller programmed to control output power of said power unit to maintain the bank of ultracapacitors between a predetermined high voltage set-point and a predetermined low voltage set-point, as in the present invention.

Rather, the Lyons reference teaches only maintaining "headroom" in a battery for a normal regeneration event by setting the high limit for SOC during a charging event by the generator to a value less than the full SOC of the battery. In other words, the predetermined high SOC set-point is less than the "full" SOC of the battery, and, in addition, Applicants respectfully submit that there would be no motivation to provide a predetermined low voltage set-point in a battery-based system.

Accordingly, as the Lyons reference is strictly limited to a series hybrid and reads such that a battery is required, Applicants respectfully submit that this reference does

Application No. 10/721,000

no teach or suggest the invention as presently claimed. The present invention as claimed features a combination of a hybrid vehicle using a bank of ultracapacitors as the energy storage system, and a programmed controller that are substantially different than that disclosed by the Lyons reference.

Claim 9 has also been amended to specify that the hybrid vehicle of claim 1 has no device connected between the bank of ultracapacitors and the electric motor to convert variable voltage power to fixed voltage power (such as a so-called buck-boost device). Applicants respectfully submit that this claim is supported, for instance, on page 1 of the application as filed, and that this claim is patentable in view of the references that remain citable as prior art in view of the evidence presented herein.

The Rejections under 35 U.S.C. 102 and 103 based upon the Morisawa et al. reference (US Patent No. 6,205,379)

The Examiner has also rejected many of the claims (claims 1 – 12, 17 – 22, 31, 34, 35, 38 – 41 and 44) as allegedly taught by the Morisawa et al. reference (US Patent No. 6,205,379), and has combined its teaching with that of secondary references by Lyons, Slicker, Ibaraki and Deguchi et al. to reject claims 9, 14, 15 and 30, respectively.

Finally, the Examiner has combined the Morisawa et al. reference with his own knowledge to reject claims 16, 28, 29, 37 and 46.

The citation of the Morisawa et al. and Deguchi et al. references are based upon 35 U.S.C. 102(e), the Morisawa et al. reference having a 102(e) date of August 12, 1999 and the Deguchi et al. reference having a 102(e) date of June 3, 1999. Applicants submit herewith the declarations of two of the co-inventors, Robert Gruenwald and Jeff Major, to establish that the claimed invention was reduced to practice at least as early

as June 3, 1999. The declarations of Mr. Gruenwald and Mr. Major authenticate dated copies of documents that clearly establish that the claimed hybrid vehicle was in existence and in operation at least as early as June 3, 1999. Exhibit A of both declarations refers to the descriptions of the software used in accordance with one embodiment of the invention of claims 1 and 34, which software sets a pre-determined low voltage set-point for the energy storage system; and a pre-determined high voltage set-point for the energy storage system. Mr. Gruenwald's declaration further authenticates as Exhibit B a dated copy of a portion of the source code used to operate the hybrid vehicle of the claimed invention with respect to the setting of a pre-determined low voltage set-point for the energy storage system; and a pre-determined high voltage set-point for the energy storage system.

Exhibit B of the Major declaration and Exhibit C of the Gruenwald declaration is a true and accurate of a document entitled "Baseline Testing of the Hybrid Electric Transit Bus" that describes the testing of a hybrid bus of the type that embodied the inventions described and claimed in the subject application. Figures 1 and 2 of that document show pictures of the ultracapacitor-bearing hybrid electric bus that incorporated the inventions described and claimed in the subject application, including the software described in Exhibit A of the Major declaration, and in Exhibits A and B of the Gruenwald declaration.

Accordingly, Applicants respectfully submit that the declarations of Mr. Gruenwald and Mr. Major represent a showing of facts of such character and weight as to establish reduction to practice of the claimed invention prior to the effective date of the Morisawa et al. and Deguchi et al. references.

Application No. 10/721,000

In view of the foregoing, Applicants respectfully submit that the rejections under 35 U.S.C. 102 and 103 may properly be withdrawn to the extent based in whole or in part upon the Morisawa et al. and Deguchi et al. references. Applicants respectfully request an indication of allowability of those claims presently rejected based on any combination of either of these two references.

CONCLUSION

In view of the foregoing amendment and accompanying remarks, Applicants respectfully submit that the present application is properly in condition for allowance and may be passed to issuance upon payment of the appropriate fees.

Telephone inquiry to the undersigned in order to clarify or otherwise expedite prosecution of the subject application is respectfully encouraged.

Respectfully submitted,

Robert Gruenwald
Jeff T. Major
Anthony J. Palumbo

Date: Aug. 11, 2005

By: 
Roger A. Gilcrest

Registration No.: 31,954
Schottenstein, Zox & Dunn Co., L.P.A.
250 West Street
Columbus, Ohio 43215
Mailing Address:
P.O. Box 165020
Columbus, Ohio 43216-5020
P: (614) 462-1055
F: (614) 462-5135
Email: rgilcrest@szd.com